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Docket No.: A-2958

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MAIL STOP: APPEAL BRIEF-PATENTS

By: _____ Date: February 9, 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

Applic. No.	:	10/022,660 Confirmation No.: 1769
Inventor	:	Monika Blümm et al.
Filed	:	December 18, 2001
Title	:	Cylinder Jacket Profile, Method of Producing an Easy-Clean Layer on a Cylinder Jacket Profile and Printing Press
TC/A.U.	:	2854
Examiner	:	Marvin P. Crenshaw
Customer No.	**:**	**24131**

Hon. Commissioner for Patents
Alexandria, VA 22313-1450

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BRIEF ON APPEAL

S i r :

This is an appeal from the final rejection in the Office action dated September 5, 2003, finally rejecting claims 1-4, 7-9 and 11-16.

Appellants submit this *Brief on Appeal* in triplicate, including payment in the amount of $330.00 to cover the fee for filing the *Brief on Appeal*.

Real Party in Interest:

This application is assigned to Heidelberger Druckmaschinen AG of Heidelberg, Germany. The assignment will be submitted for recordation upon the termination of this appeal.

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No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

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Claims 1-4, 7-9 and 11-16 are rejected and are under appeal. Claims 5, 6 and 10 were cancelled in an amendment filed on June 24, 2003.

Status of Amendments:

Claims 1, 8, 9, 13, 15 were amended after the final Office action. *An amendment under 37 CFR § 1.116* was filed on December 8, 2003. The Examiner telephoned counsel on January 5, 2004 to state that he had not received Appelants' amendment. The amendment was therefore faxed to the Examiner on January 5, 2004 together with a copy of the return receipt postcard showing that it was received on December 8, 2003. No Advisory Action has been received by counsel.

Summary of the Invention:

As stated in the first paragraph on page 1 of the specification of the instant application, the invention relates to a cylinder jacket profile, a method of producing a cylinder jacket profile, and to a rotary printing press.

Appellants explained on page 9 of the specification, line 22, that, referring now to the figures of the drawings in detail and first, particularly, to Fig. 1 thereof, there is shown a plate cylinder 10 which is provided in an offset printing press which is only schematically indicted with a dashed line. A printing plate which includes the information that is to be printed is clamped onto the plate cylinder 10. Following the application of ink onto the plate cylinder 10, the regions that are to be printed are transferred to a rubber blanket cylinder 12. A sheet or paper web 16 is led into the nip between the rubber blanket cylinder 12 and what is known as an impression cylinder 14. The profile of the impression cylinder surface 14 has a multi-layered structure (Fig. 2a). First a nickel layer 18 with a spherical surface structure is provided as base layer, which is covered by a thin chromium layer 20 in turn. Alternatively, the nickel layer 18 can also be realized with a planar surface, whereby only the chromium layer 20 is applied in a spherical shape with uniformly distributed elevations and depressions. Typical spacings between the

elevations are between 20 and 100 µm; typical thicknesses of the chromium layer are between 5 and 10 µm. The chromium spherical structure 20 is covered by a roughened microstructure as easy-clean layer 22, the thickness of which is preferably between 10 nm and 2 µm, the microstructure exhibiting a lotus effect, which is known per se and which results in a known self-cleaning effect. This layer 22 can be produced as an amorphous carbon layer by the colloid technique or as a sol-gel lacquer. It is likewise possible to generate the layer by deposition from the gas phase, for instance by plasma polymerization, plasma supported chemical deposition from the gas phase (PECVD, Plasma-Enhanced Chemical Vapor Deposition) or similar techniques.

Appellants outlined on page 11 of the specification, line 2, that, alternatively, the easy-clean layer 22 can also be constructed as a completely smooth microstructure with a free surface energy between 10 and 50 mN/m. The thickness of the easy-clean layer 22 is selected small enough that it does not adversely alter or distort the surface profile of the chromium layer 20, which is optimized in accordance with the respective demands on the impression cylinder 14. The microstructure 22 need not necessarily be provided at the elevations of the sphere structure 22, since an impression surface which is smooth in itself is desired at these points. It is sufficient

when the microstructure, i.e. the easy-clean layer 22, is provided only in the depressions of the cylinder jacket profile, where it exerts its self-cleaning effect.

It is further outlined on page 11 of the specification, line 16, that, however, it would be very expensive in terms of application technology to introduce the easy-clean layer 22 only in the depressed regions. For this reason, the easy-clean layer 22 is applied to the spherical chromium structure 20 surface-wide, i.e. as an uninterrupted layer (Fig. 2a), and eroded or removed by the mechanical contact with the sheet 16 after only a few revolutions of the impression cylinder 14 (Fig. 2b) simply in the course of its use. The surface structure of the jacket profile is altered, if at all, to such a small extent that adverse effects do not arise in the subsequent print operation.

Appellants described on page 12 of the specification, line 2, that, as a result, after only a few revolutions of the impression cylinder 14, the available impression cylinder surface includes a spherical structure with the additional easy-clean microstructure 22. The spherical structure guarantees that ink particles which are inadvertently or undesirably applied to the impression cylinder 14 can run into the depressions of the spherical structure 20, and

accordingly, they are not transferred onto the sheet 16 when the counterpressure is exerted on it, since only the elevations of the chromium sphere structure 20 press against the sheet. The surface shape of the spherical structure guarantees that the ink is optimally repelled due to the easy-clean layer 22 and thereby prevented from adhering to the impression cylinder 14, and at the same time a sufficiently high counterpressure is made available by the wear-free chromium surface 20 (Fig. 2b).

As further described on page 12 of the specification, line 18, Fig. 3 is a partial sectional, highly diagrammatic view of a cylinder jacket profile for illustrating various surface structure configurations, such as a cylindrical shape 24, a conical shape, for example a truncated cone 26 or a pyramidal shape 28.

It is set forth in the last paragraph on page 12 of the specification, line 24, that the invention has been described in connection with an impression cylinder. But clearly it can also be used in other paper guiding or sheet transferring cylinders.

References Cited:

U.S. Patent No. 6,041,706 (Murray), dated March 28, 2000;

U.S. Patent No. 6,077,207 (Yokoyama et al.), dated June 20, 2000.

Issues

1. Whether or not claims 1-4, 7-9, and 11-16 are obvious over Yokoyama et al. (U.S Patent No. 6,077,207) (hereinafter "Yokoyama") in view of Murray (U.S Patent No. 6,041,706) under 35 U.S.C. §103.

Grouping of Claims:

Claims 1, 8, 9, 11, 13 and 15 are independent. Claims 2-4 and 7 depend on claim 1, claim 12 depends on claim 11, claim 14 depends on claim 13 and claim 16 depends on claim 15. The patentability of claims 2-4, 7, 12, 14, and 16 are all separately argued. Therefore, claims 2-4 and 7 do not stand or fall with claim 1, claim 12 does not stand or fall with claim 11, claim 14 does not stand or fall with claim 13, and claim 16 does not stand or fall with claim 15.

Arguments:

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claims 1, 11, and 15 call for, *inter alia*:

a sheet-guiding cylinder jacket profile having a spherical surface structure, and an easy-clean microstructure layer as a surface coating for the sheet-guiding cylinder jacket profile.

It is noted that the corporate assignee of the Murray reference is also the corporate assignee of the instant application, therefore applicants are very familiar with the Murray reference.

1. Claims 1, 11, and 15 are Not Obvious Over Yokoyama in View of Murray:

The Yokoyama reference discloses a surface-coarsened layer (12), which is covered by a ceramic layer (15) (Figs 3 and 5).

The Murray reference discloses a blanket cylinder including a material of low polarity surface energy, such as PTFE (abstract).

The references do not show or suggest a sheet-guiding cylinder jacket profile having a spherical surface structure, and an easy-clean microstructure layer as a surface coating for the

sheet-guiding cylinder jacket profile, as recited in claims 1, 11, and 15 of the instant application.

The Yokoyama reference discloses a jacket profile of irregular shape, the jacket profile of Yokoyama does not have a spherical surface structure. This is contrary to the invention of the instant application as claimed, in which the jacket profile has a spherical surface structure. Furthermore, the Yokoyama reference discloses a ceramic covering layer (15), which is not an easy-clean microstructure layer. This is also contrary to the invention of the instant application as claimed, in which an easy-clean microstructure layer is provided as a surface coating for the sheet-guiding cylinder jacket profile.

The Murray reference only discloses the use of a blanket cylinder having PTFE. Murray does not disclose a jacket profile having a spherical structure or an easy-clean microstructure layer provided as a surface coating.

Therefore, claims 1, 11, and 15 are not obvious over Yokoyama in view of Murray.

Since claims 1, 11, and 15 are allowable, dependent claims 2-4, 7, 12 and 16 are allowable as well.

Claims 8, 9, and 13 call for, *inter alia*:

an easy-clean microstructure layer provided as a surface coating for the cylinder jacket profile, the easy-clean microstructure layer being provided only in the depressions.

2. Claims 8, 9, and 13 are Not Obvious Over Yokoyama in View of Murray:

The Yokoyama reference discloses while the resin layer (16) covers the surface of the ceramic layer (15) substantially wholly, it adheres in a large thickness to the depressions of pitch waves and in a small thickness to the protuberances of pitch waves (column 7, lines 22-25 and Figs. 3 and 4). Referring to Figs. 3 and 4 of Yokoyama, it can be seen that layer (16) extends in the regions of the depressions as well as the elevations of the layer (15).

It is a requirement for a *prima facie* case of obviousness, that the prior art references must teach or suggest **all** the claim limitations.

The references do not show or suggest an easy-clean microstructure layer provided as a surface coating for the

cylinder jacket profile, the easy-clean microstructure layer being provided only in the depressions, as recited in claims 8, 9, and 13 of the instant application. The Yokoyama reference discloses that the resin layer (16) covers the surface of the ceramic layer (15) substantially wholly. This is contrary to the invention of the instant application as claimed, in which the easy-clean microstructure layer is provided only in the depressions and not on the elevations of the spherical surface structure.

The references applied by the Examiner **do not** teach or suggest all the claim limitations. Therefore, it is believed that the Examiner has not produced a *prima facie* case of obviousness.

Therefore, claims 8, 9, and 13 are not obvious over Yokoyama in view of Murray.

Since claim 13 is allowable, dependent claim 14 is allowable as well.

Based on the above-given comments, the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Respectfully submitted,

Alfred K. Dassler
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For Appellants

AKD/bb

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Fax: (954) 925-1101

Appendix - Appealed Claims:

1. A cylinder jacket profile configuration for a rotary printing press cylinder, comprising:

a sheet-guiding cylinder jacket profile having a spherical surface structure; and

an easy-clean microstructure layer as a surface coating for said sheet-guiding cylinder jacket profile, said easy-clean microstructure layer having a thickness of less than 5 μm and a surface energy of less than 50 mN/m.

2. The cylinder jacket profile configuration according to claim 1, wherein said thickness of said easy-clean microstructure layer is substantially 1 μm.

3. The cylinder jacket profile configuration according to claim 1, wherein said sheet-guiding cylinder jacket profile includes an anti-wear layer, said easy-clean microstructure layer is disposed on said anti-wear layer.

4. The cylinder jacket profile configuration according to claim 3, wherein said anti-wear layer is a chromium layer.

7. The cylinder jacket profile configuration according to claim 1, wherein said easy-clean microstructure layer exhibits a lotus effect.

8. A cylinder jacket profile configuration for a rotary printing press cylinder, comprising:

a sheet-guiding cylinder jacket profile including a spherical surface structure having elevations;

an easy-clean microstructure layer as a surface coating for said sheet-guiding cylinder jacket profile, said easy-clean microstructure layer being interrupted on said elevations, and said easy-clean microstructure layer having a thickness of less than 5 μm and a surface energy of less than 50 mN/m.

9. A printing press, comprising:

a cylinder having a jacket surface with a cylinder jacket profile including a spherical surface structure having depressions; and

an easy-clean microstructure layer provided as a surface coating for said cylinder jacket profile, said easy-clean microstructure layer being provided only in said depressions,

and said easy-clean microstructure layer having a thickness of less than 5 µm and a surface energy of less than 50 mN/m

11. A method for producing an easy-clean layer on a cylinder jacket profile, the method which comprises:

providing a cylinder jacket profile having a spherical surface structure; and

applying an easy-clean layer as a surface coating for the cylinder jacket profile, the easy-clean layer providing a microstructure to the jacket profile such that the easy-clean layer has a thickness of less than 5 µm and a surface energy of less than 50 mN/m.

12. The method according to claim 11, which comprises applying the easy-clean layer such that the thickness of the easy-clean layer is substantially 1 µm.

13. A method for producing an easy-clean layer on a cylinder jacket profile, the method which comprises:

providing a cylinder jacket profile having a spherical surface structure;

applying an easy-clean layer as a surface coating for the cylinder jacket profile, the easy-clean layer providing a microstructure to the jacket profile such that the easy-clean layer has a thickness of less than 5 µm and a surface energy of less than 50 mN/m; and

applying the easy-clean layer initially as a substantially uninterrupted layer and subsequently removing the easy-clean layer from elevations of the spherical surface structure.

14. The method according to claim 13, which comprises removing the easy-clean layer by contacting the easy-clean layer with a printing sheet during a printing operation.

15. A printing press, comprising:

a cylinder having a jacket surface with a cylinder jacket profile having a spherical surface structure; and

an easy-clean microstructure layer provided as a surface coating for said cylinder jacket profile, said easy-clean microstructure layer having a thickness of less than 5 µm and a surface energy of less than 50 mN/m.

16. The printing press according to claim 15, wherein said cylinder is a sheet-guiding cylinder selected from the group consisting of an impression cylinder and a sheet transfer cylinder configured for a recto/verso printing.

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when the microstructure, i.e. the easy-clean layer 22, is provided only in the depressions of the cylinder jacket profile, where it exerts its self-cleaning effect.

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The Murray reference discloses a blanket cylinder including a material of low polarity surface energy, such as PTFE (abstract).

The references do not show or suggest a sheet-guiding cylinder jacket profile having a spherical surface structure, and an easy-clean microstructure layer as a surface coating for the

sheet-guiding cylinder jacket profile, as recited in claims 1, 11, and 15 of the instant application.

The Yokoyama reference discloses a jacket profile of irregular shape, the jacket profile of Yokoyama does not have a spherical surface structure. This is contrary to the invention of the instant application as claimed, in which the jacket profile has a spherical surface structure. Furthermore, the Yokoyama reference discloses a ceramic covering layer (15), which is not an easy-clean microstructure layer. This is also contrary to the invention of the instant application as claimed, in which an easy-clean microstructure layer is provided as a surface coating for the sheet-guiding cylinder jacket profile.

The Murray reference only discloses the use of a blanket cylinder having PTFE. Murray does not disclose a jacket profile having a spherical structure or an easy-clean microstructure layer provided as a surface coating.

Therefore, claims 1, 11, and 15 are not obvious over Yokoyama in view of Murray.

Since claims 1, 11, and 15 are allowable, dependent claims 2-4, 7, 12 and 16 are allowable as well.

Claims 8, 9, and 13 call for, *inter alia*:

an easy-clean microstructure layer provided as a surface coating for the cylinder jacket profile, the easy-clean microstructure layer being provided only in the depressions.

2. Claims 8, 9, and 13 are Not Obvious Over Yokoyama in View of Murray:

The Yokoyama reference discloses while the resin layer (16) covers the surface of the ceramic layer (15) substantially wholly, it adheres in a large thickness to the depressions of pitch waves and in a small thickness to the protuberances of pitch waves (column 7, lines 22-25 and Figs. 3 and 4). Referring to Figs. 3 and 4 of Yokoyama, it can be seen that layer (16) extends in the regions of the depressions as well as the elevations of the layer (15).

It is a requirement for a *prima facie* case of obviousness, that the prior art references must teach or suggest **all** the claim limitations.

The references do not show or suggest an easy-clean microstructure layer provided as a surface coating for the

cylinder jacket profile, the easy-clean microstructure layer being provided only in the depressions, as recited in claims 8, 9, and 13 of the instant application. The Yokoyama reference discloses that the resin layer (16) covers the surface of the ceramic layer (15) substantially wholly. This is contrary to the invention of the instant application as claimed, in which the easy-clean microstructure layer is provided only in the depressions and not on the elevations of the spherical surface structure.

The references applied by the Examiner **do not** teach or suggest all the claim limitations. Therefore, it is believed that the Examiner has not produced a *prima facie* case of obviousness.

Therefore, claims 8, 9, and 13 are not obvious over Yokoyama in view of Murray.

Since claim 13 is allowable, dependent claim 14 is allowable as well.

Based on the above-given comments, the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

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Alfred K. Dassler
52,794

For Appellants

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Date: February 9, 2004.

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Appendix - Appealed Claims:

1. A cylinder jacket profile configuration for a rotary printing press cylinder, comprising:

a sheet-guiding cylinder jacket profile having a spherical surface structure; and

an easy-clean microstructure layer as a surface coating for said sheet-guiding cylinder jacket profile, said easy-clean microstructure layer having a thickness of less than 5 μm and a surface energy of less than 50 mN/m.

2. The cylinder jacket profile configuration according to claim 1, wherein said thickness of said easy-clean microstructure layer is substantially 1 μm.

3. The cylinder jacket profile configuration according to claim 1, wherein said sheet-guiding cylinder jacket profile includes an anti-wear layer, said easy-clean microstructure layer is disposed on said anti-wear layer.

4. The cylinder jacket profile configuration according to claim 3, wherein said anti-wear layer is a chromium layer.

7. The cylinder jacket profile configuration according to claim 1, wherein said easy-clean microstructure layer exhibits a lotus effect.

8. A cylinder jacket profile configuration for a rotary printing press cylinder, comprising:

a sheet-guiding cylinder jacket profile including a spherical surface structure having elevations;

an easy-clean microstructure layer as a surface coating for said sheet-guiding cylinder jacket profile, said easy-clean microstructure layer being interrupted on said elevations, and said easy-clean microstructure layer having a thickness of less than 5 μm and a surface energy of less than 50 mN/m.

9. A printing press, comprising:

a cylinder having a jacket surface with a cylinder jacket profile including a spherical surface structure having depressions; and

an easy-clean microstructure layer provided as a surface coating for said cylinder jacket profile, said easy-clean microstructure layer being provided only in said depressions,

and said easy-clean microstructure layer having a thickness of less than 5 µm and a surface energy of less than 50 mN/m

11. A method for producing an easy-clean layer on a cylinder jacket profile, the method which comprises:

providing a cylinder jacket profile having a spherical surface structure; and

applying an easy-clean layer as a surface coating for the cylinder jacket profile, the easy-clean layer providing a microstructure to the jacket profile such that the easy-clean layer has a thickness of less than 5 µm and a surface energy of less than 50 mN/m.

12. The method according to claim 11, which comprises applying the easy-clean layer such that the thickness of the easy-clean layer is substantially 1 µm.

13. A method for producing an easy-clean layer on a cylinder jacket profile, the method which comprises:

providing a cylinder jacket profile having a spherical surface structure;

applying an easy-clean layer as a surface coating for the cylinder jacket profile, the easy-clean layer providing a microstructure to the jacket profile such that the easy-clean layer has a thickness of less than 5 μm and a surface energy of less than 50 mN/m; and

applying the easy-clean layer initially as a substantially uninterrupted layer and subsequently removing the easy-clean layer from elevations of the spherical surface structure.

14. The method according to claim 13, which comprises removing the easy-clean layer by contacting the easy-clean layer with a printing sheet during a printing operation.

15. A printing press, comprising:

a cylinder having a jacket surface with a cylinder jacket profile having a spherical surface structure; and

an easy-clean microstructure layer provided as a surface coating for said cylinder jacket profile, said easy-clean microstructure layer having a thickness of less than 5 μm and a surface energy of less than 50 mN/m.

16. The printing press according to claim 15, wherein said cylinder is a sheet-guiding cylinder selected from the group consisting of an impression cylinder and a sheet transfer cylinder configured for a recto/verso printing.